

Listing of the Claims:

1. (Currently Amended) A heater apparatus for heating fluid, the heater apparatus comprising:

heating means including a CARBON ROD embedded in an electrically conductive material;
a thermally conductive mass molded to the heating means, wherein substantially all of an exterior surface of the heating means directly contacts the thermally conductive mass, wherein the heating means is in direct contact with the mass for inputting heat to the thermally conductive mass; and

the mass having a fluid flow path including a first channel and a second channel formed in series therein, the first channel in fluid communication with the second channel, the fluid flow path running between an inlet and an outlet with and said heating means disposed between the first and second channels, the fluid flow path coupled in heat transfer relation to the heating means so that fluid in the fluid flow path absorbs heat from the thermally conductive mass, the fluid flow path open to the exterior of the thermally conductive mass.

2. (Previously Presented) The heater apparatus of claim 1 further comprising:
control means, connected to the heating means, for activating the heating means.

3. (Previously Presented) The heater apparatus of claim 2 wherein the control means further comprises:
a printed circuit board.

4. (Presently Presented) The heater apparatus of claim 2 wherein the control means further comprises:
temperature sensor means, coupled to the control means, for generating an output signal proportional to the temperature of the thermally conductive mass.

5. (Presently Presented) The heater apparatus of claim 1 further comprising fluid expansion means, wherein the fluid expansion means comprises:
a closure having an enlarged portion defining a hollow interior chamber overlaying the open ends of the fluid flow path in the thermally conductive mass.

Dated August 26, 2009

Reply to Office Action dated April 28, 2009

6. (Previously Presented) The heater apparatus of claim 1 wherein the first channel extends across one surface of the thermally conductive mass; and

the second channel extends across an opposed surface of the thermally conductive mass, the first and second channels disposed in fluid flow communication.

7. (Previously Presented) The heater apparatus of claim 6 wherein the first and second channels are disposed in fluid flow communication substantially at a center of the thermally conductive mass.

8. (Original) The heater apparatus of claim 1 wherein the heating means comprises: at least one heater element mounted in the mass.

9. (Original) The heater apparatus of claim 8 wherein the heating means is in direct contact with the thermally conductive mass over a substantial portion of its outer surface.

10. (Original) The heater apparatus of claim 1 wherein the heating means comprises: a plurality of heater elements mounted in the mass.

11. (Previously Presented) The heater apparatus of claim 1 further comprising: a controller for controlling the activation of each of the heater elements.

12. (Original) The heater apparatus of claim 1 further comprising: a closure fixed to one surface of the mass; and seal means for fluidically sealing the thermally conductive mass to the closure.

13. (Original) The heater apparatus of claim 12 wherein the seal means comprises: an O-ring disposed between the peripheral portions of the closure and the thermally conductive mass.

14. (Original) The heater apparatus of claim 1 further comprising:

Dated August 26, 2009

Reply to Office Action dated April 28, 2009

an electrical ground member electrically connected to the heating means, the ground member including a terminal and a plate electrically connected to the terminal and to the heating means.

15. (Currently Amended) A method of making a heater apparatus for heating fluid, the method comprising the steps of:

providing a heater means; and

molding to the heater means a thermally conductive material into a mass having a fluid flow path including a first channel and a second channel formed in series therein and in fluid communication with each other to the heater means with a substantial portion of the heater means in direct contact with the mass and the heater means disposed between the first and second channels.

16. (Original) The method of claim 15 further comprising the step of:

providing a ground terminal in electrical contact with the at least one heater element.

17. (Original) The method of claim 15 wherein the step of providing a thermally conductive mass further comprises the step of:

casting the mass using a sub-liquidous temperature material.

18. (Currently Amended) A method of making a heater apparatus for heating fluid, the method comprising the steps of:

providing a heater means CALROD;

fixably mounting the heater means in a mold cavity;

introducing a thermally conductive material into the mold cavity;

molding the thermally conductive material into a mass having at least one fluid flow path including a first channel and a second channel formed in series therein to the heater means, the first channel formed in fluid communication with the second channel, with a substantial portion of the heater means in direct contact with the mass and the heater means disposed between the first and second channels; and